Paper No. 9

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN R. ANDREWS

Appeal No. 1998-2463
Application No. 08/598,854

ON BRIEF

Before HAIRSTON, FLEMING, and LEVY, Administrative Patent Judges.

LEVY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-11, which are all of the claims pending in this application.

BACKGROUND

The appellant's invention relates to facet tracking using wavelength variations and a dispersive element. An understanding

of the invention can be derived from a reading of exemplary claims 1 and 11, which are reproduced as follows:

1. A scanner, comprising:
a laser for emitting a laser beam having a wavelength which is a function of an electric signal;
a source for applying a variable electric signal to said laser;
a rotating facet for sweeping the laser beam in a scan line; and
a wavelength dispersive element for receiving the laser beam and for directing the laser beam onto the rotating facet to form a spot;
wherein said wavelength dispersive element is positioned, and said source varies the electric signal to said laser such that the spot tracks the rotation of said facet.

11. A method of facet tracking comprising the steps of:
passing a variable wavelength laser beam through a wavelength dependent dispersive element into a spot on a selected area of a rotating facet; and
varying the wavelength of the laser beam such that the spot follows the selected area as the facet rotates.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Asada	4,845,358	Jul. 4, 1989
Andrews	5,363,126	Nov. 8, 1994
Appel et al. (Appel)	5,498,869	Mar. 12, 1996 (filed Dec. 20, 1993)

Claims 1-5 and 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over Andrews in view of Appel. Claims 6-

10[1] stand rejected under 35 U.S.C. § 103 as unpatentable in view of Andrews in view of Appel, further in view of Asada.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 8, mailed March 30, 1998) and the final rejection (Paper No. 5, mailed October 27, 1997) for the examiner's complete reasoning in support of the rejections, and to the appellant's brief (Paper No. 7, filed February 9, 1998) for the appellant's arguments thereagainst. Only those arguments actually made by the appellant have been considered in this decision. Arguments which the appellant could have made but chose not to make in the brief have not been considered. See 37 CFR 1.192(a).

OPINION

[1] The examiner (answer, page 3) notes that a substantially correct copy of claim 9 appears in the appendix to the brief. A correct copy of claim 9 is attached to this decision.

In reaching our decision in this appeal, we have carefully considered the subject matter on appeal, the rejections advanced by the examiner, and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the brief along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

Upon consideration of the record before us, we make the determinations which follow.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem

from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole. See id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

We consider first the rejection of claims 1-5 and 11 based on the teachings of Andrews in view of Appel. We begin with claim 1. The examiner asserts (final rejection, page 2) that Andrews fails to disclose a variable wavelength laser and a wavelength dispersive element. To overcome these deficiencies in Andrews, the examiner relies upon Appel for a teaching of a controller for applying a variable signal to a laser, and a wavelength dispersive element for receiving the laser beam and for directing the beam onto the facet to form a spot. The examiner concludes (id.) that "[i]t would have been obvious to replace the laser and dispersive element in Andrews with those of Appel et al (but still oriented as in Andrews), to obtain a shorter wavelength switching time, and to deploy a cheaper, passive dispersive element."

The appellant admits (brief, page 5) that the invention is comprised of elements described in prior art references. The appellant asserts (brief, page 6) "[t]aken alone or in combination there is no suggestion in Appel et al. and Andrews to use wavelength variations for facet tracking. Appel et al., which do teach the use of wavelength variations, do not teach facet tracking. Andrews, which does teach facet

tracking, does not teach the use of wavelength variations to accomplish it."

We find that Andrews is directed to a raster output scanner (col. 1, lines 5-11) which includes both facet tracking and wobble correction (col. 12, lines 34-36). Facet tracking (col. 3, lines 29-32) is brought about through the use of a shifting structure for causing the laser beam to follow the active deflecting facet as it rotates. In facet shifting (col. 11, lines 37 and 38), the laser beam is shifted in a direction
parallel to polygon rotation. In wobble correction (col. 11, lines 35 and 36), the laser beam is shifted in a direction perpendicular to the direction of rotation of the polygon (Figure 6). In Andrews (col. 7, lines 29-31), an optical element 50 is disposed in the pre-scan optics, between laser 12 and rotating polygon 16. The optical element 50, includes (col. 7, lines 38-40) a cell containing a ferroelectric liquid crystal material. Andrews further discloses (col. 8, lines 8-17) that by applying a biasing voltage to the optical element 50, the refractive index of the optical element is varied, resulting in the laser beam being deflected at an angle with

respect to the magnitude of the biasing voltage. Thus, Andrews teaches the use of facet tracking in a raster output scanner, but does not do so by varying the electrical signal to vary the wavelength of the laser. Rather, Andrews teaches providing a varying electrical signal to the optical element 50, which has a variable index of refraction.

We find that Appel is directed to (col. 1, lines 10-15) facet-to-facet wobble correction in a raster output scanner. Appel discloses (Figures 3 and 4 and col. 4, lines 3-45) the use of a controller 230 for modulating the wavelength of laser source 202 so that upon passing through optical beam deflecting element
206, wobble in a facet of a pyramidal scanner can be corrected prior to scanning. Appel further discloses an alternate embodiment (Figures 5 and 6, and col. 5, lines 34-48) wherein controller 230 provides an electrical signal to optical beam deflecting element 232 which has a variable index of refraction. Appel additionally discloses (embodiments of Figures 7-9, and col. 5, lines 50-58) that the controller can provide electrical signals to modulate both the wavelength of the laser source and the variable index of refraction of the

optical beam deflecting element. Thus, we find that in Appel, electrical signals are used to modulate either the laser source and/or the optical beam deflecting element, but only to provide correction of pyramidal wobble. We find that neither Andrews nor Appel discloses varying the electric signal to the laser for facet tracking.

Obviousness is tested by "what the combined teachings of the references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). Obviousness "cannot be established by combining the teachings of the prior art to produce the claimed invention,
absent some teaching or suggestion supporting the combination." ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). Although the prior art to Andrews and Appel suggests that wavelength modulation of the laser can be used to correct pyramidal wobble, and that both wavelength and refractive index modulation can be used to correct pyramidal wobble, we find that the advantages of utilizing modulation of the laser source for facet tracking were not taught or suggested by the

prior art applied by the examiner. We agree with the examiner that if the raster output scanners of Andrew and Appel were modified as advanced by the examiner the resultant structure might obtain a shorter wavelength switching time, and a passive dispersive element could have been utilized. However, from all of the above, we find no suggestion in the prior art for making the proposed modification of replacing the laser and dispersive element of Andrews with those of Appel.

It appears to us that the examiner has relied upon hindsight in reaching the obviousness determination. Our reviewing court has said, "[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." W. L. Gore & Assoc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). Accordingly, we find that the examiner has failed to establish a prima facie

case of obviousness with respect to claim 1. The rejection of claim 1 under 35 U.S.C. § 103 is therefore reversed. As claims 2-5 depend from claim 1, the rejection of claims 2-5 under 35 U.S.C. § 103 is reversed.

Turning next to claim 11, we find that claim 11 recites "varying the wavelength of the laser beam such that the spot follows the selected area as the facet rotates." However, unlike claim 1, claim 11 does not recite that the electric signal to the laser is varied. Claim 11 recites that the wavelength of the laser beam is varied. We find that Andrews teaches (col. 8, lines 49-52) that "[s]uch liquid crystal cells are often used to alter polarization of a light passing therethrough so as to provide . . . a wavelength tuner" (underlining added). In view of the teachings of Andrews, we find that it would have been manifestly obvious to a skilled artisan to have used the liquid crystal cell of optical element 50 of Andrews as a wavelength tuner. However, as acknowledged by the examiner

(final rejection, page 2) Andrews does not disclose "a wavelength [dependent] dispersive element." For the reasons stated above with respect to claim 1, we find no suggestion in the prior art to have substituted the wavelength dependent dispersive element 206 of Appel for the variable refractive index optical element 50 of Andrews. We additionally find that if the wavelength dependent dispersive element of Appel were substituted for the variable refractive index optical element 50 of Andrews, the resultant structure would not include wavelength tuning. We therefore conclude that the examiner has failed to establish a prima facie case of obviousness for claim 11. Accordingly, the rejection of claim 11 under 35 U.S.C. § 103 is reversed.

We turn next to the rejection of claims 6-10 under 35 U.S.C. § 103 as unpatentable over Andrews in view of Appel, further in view of Asada. We note that claim 6 has language identical to claim 1 "said source varies the electrical signal to said laser such that the spot tracks the rotation of said facet." In addition, we find that Asada does not overcome the deficiencies of the basic combination of Andrews and Appel.

Accordingly, the rejection of claims 6-10 under 35 U.S.C. § 103 is reversed.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1-11 under 35 U.S.C. § 103 is reversed.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)	
MICHAEL R. FLEMING Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
STUART S. LEVY Administrative Patent Judge	)	

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APPENDIX

9. The document production machine according to claim 6, wherein said wavelength dispersive element comprises a dispersive grating.